

### **Amendments to the Drawings**

Applicant submits replacement drawings for all Figures. These are not new matter because both formal and informal drawings were of record in the original filing. However, the informal drawings were presented in the US Publication. Accordingly, amended sheets from the PCT are resubmitted as replacement sheets.

In addition, amendments to Fig. 3 have been provided. Both the hub end 32 and the hub 38 were shown in the prior version of Fig. 3 but not labeled. The relevant replacement sheet provides these labels.

## **Remarks/Arguments**

Claims 1-21 are pending in the application. Claims 1-9 and 17-21 were previously withdrawn and are hereby cancelled. Claims 10-16 are rejected. Claims 11 and 16 are canceled. Claims 10 and 14 are amended. Claims 22-42 are new.

The specification has been amended to clarify language relating to the blade plane. Support for this is shown, for example, in Figs. 1-3. In addition, the specification was amended to delete a paragraph that was included by mistake.

Claim 10 is amended to include a plurality of blades radially-disposed from a shaft. Support for this shown, for example in Figs. 1-3.

Claim 14 is rewritten in independent form with no additional limitations from those previously presented.

Claims 22-42 are new. Claim 22 presents a new independent claim. Support for this is shown, for example, in Fig. 3 and the text describing it. Claim 23 recites that the first plurality of blades are in substantially coplanar arrangement. Support for this is shown, for example, in paragraph [0031]. Claim 24 recites that the engine is disposed within the cylinder defined by the specified radius and the first hub axis of rotation. This is shown, for example, in Figs. 8A and 8B. Claim 25 recites that the blades are adapted to provide propulsive thrust when the first rotatable hub rotates. Support for this is shown, for example, in paragraph [0031]. Claim 26 recites an external electrical system of an aerial vehicle electrically coupled to the ring generator. Support for this is shown, for example, in paragraph [0050]. Claim 27 recites a plurality of non-contiguous, symmetrically arranged arc segments arranged about a given radius at the end of the rotor blades. Claim 28 recites three arc segments arranged at about 120 degrees apart. Support for claims 27 and 28 is shown, for example, in paragraph [0049]. Claim 29 recites a second current conducting element equidistant from the first current conducting element. Support for this is shown, for example, in paragraph [0046]. Claim 30 recites the use of

two sets of blades, etc. Claim 31 recites that the two axes of rotation are coextensive. Claim 32 recites imparting rotation motion in opposite directions. Support for claims 30-32 is shown, for example, in paragraph [0061]. Claim 33 recites that the engine comprises a first opposed piston, opposed cylinder (opoc) engine module. Support for this is shown, for example, in paragraph [0012]. Claim 34 recites a second opoc second engine module. Support for this is shown, for example, in Fig. 9A. Claim 35 recites a clutching mechanism to decouple the second engine. Support for this is shown, for example, in paragraph [0057]. Claim 36 recites a third opoc engine module. Support for this is shown, for example, in Fig. 9B. Claim 37 recites that the engine has a specified weight to power ratio. Support for a power to weight ratio is shown, for example, in paragraph [0004]. The lower limit of about 0.76 is shown, for example, in Fig. 11, Family 3, third row showing a power of 42 horsepower and a weight of 55.0 lbs. The upper limit of about 2.46 horsepower per pound is shown, for example, in Fig. 11, Family 1a, third row showing a power of 42 horsepower and a weight of 17.1 pounds. Claim 38 recites a power output of about 9 to about 42 horsepower. The lower limit is shown, for example, in Fig. 11, Family 1a, first row showing a power of 9 horsepower. The upper limit is shown, for example, in Fig. 11, Family 1a, third row showing a power of 42 horsepower. Claim 39 recites that the engine has a specified weight to power ratio. Support for a power to weight ratio is shown, for example in paragraph [0004]. The lower limit of about 1.21 is shown, for example, in Fig. 11, Family 1b, second row showing a power of 17 horsepower and a weight of 14.0 lbs. The upper limit of about 2.25 horsepower per pound is shown, for example, in Fig. 11, Family 1a, first row showing a power of 9 horsepower and a weight of 4 pounds. Claim 40 recites a power output of about 1.5 to about 35 horsepower. Support for this is shown, for example, in paragraph [0007]. Claim 41 recites that the magnetic flux generating element is fixedly disposed in relation to the hub. This is shown, for example, in Fig. 3. Claim 42 recites a second magnetic flux generating element that

is fixedly disposed in relation to the first rotatable hub at a specified radius. This is shown, for example, in Fig. 4.

### **Drawing Objections**

The Office Action objected to the drawings as not showing every feature specified in the claims, particularly the differential apparatus and the two winding sets. The features were shown in claims 11 and 16. These claims have been canceled, so the drawing objections should be withdrawn.

### **Section 103 Rejections**

#### **Claims 10, 11, and 14.**

Claims 10, 11, and 14 are rejected under 35 U.S.C. § 103(a) over Dildine (US 2,823,653) in view of Heniges (US 4,485,768). Claim 11 is canceled.

Dildine shows an engine. However, Dildine does not show a plurality of radially-disposed blades or the ability to provide thrust. The object the Office Action considers to be a generator is enclosed and thereby incapable of providing thrust and there is no indication of a blade arrangement. Heniges shows an engine. However, Heniges does not show a plurality of radially-disposed blades or the ability to provide thrust.

Claim 10 recites, as amended, "a plurality of blades radially-disposed from a shaft." Because this limitation is not taught or suggested by either cited reference, there is no prima facie case of obviousness for claim 10 or its dependent claims.

Claim 14 recites, "the current conducting element is a stator assembly." The Office Action alleges this is shown by the electrical generator in Dildine. However, Dildine provides no detail about the electrical generator. An electrical generator may or may not include a stator assembly. If a generator does include a stator assembly, the stator assembly may or may not be

a current conducting element. The fact that a certain result or characteristic *may* occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. MPEP 2112 (IV), *citing In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). Further, the Federal Circuit has recently ruled that inherency does not relieve the burden of showing a limitation is obvious based on the teachings of the references, although the MPEP has not been updated to comply with this ruling. *Cohesive Techs., Inc. v. Waters Corp.*, (Fed. Cir. 2008, decided October 7, 2008). Accordingly, the prima facie case of obviousness of claim 14 or its dependent claims was not made in the Office Action. This claim has been rewritten in independent form.

#### **Claims 15 and 16**

Claims 15 and 16 are rejected under 35 U.S.C. §103(a) as being unpatentable over Dildine and Heniges in view of Umeda (U.S. Publication No. 2002/0135257). Claim 16 is canceled.

Umeda is a vehicle alternator. However, Umeda does not show a ring assembly, a plurality of radially-disposed blades, or the ability to provide thrust. As noted above, the prima facie case of obviousness has not been made for claim 14. Similarly, as dependent claims, the prima facie case for obviousness of claim 15 has not been made.

#### **Claims 12 and 13**

Claims 12, 13 are rejected under 35 U.S.C. §103(a) as being unpatentable over Dildine and Heniges as applied to claim 10 and further in view of Patarchi (U.S. Patent No. 6,486,582).

As noted above, the prima facie case of obviousness has not been made for claim 10. Similarly, as dependent claims, the prima facie case for obviousness of claims 12 and 13 has not been made.

Nothing herein should be deemed as a disclaimer or surrender of any rights, an acquiescence in any rejection, or a waiver of any arguments that might have been raised but were not raised herein or otherwise in the prosecution of this application. Applicant reserves all rights and subject matter with respect to claims being or to be pursued in this or a related application.

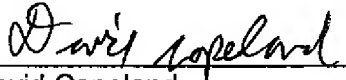
### **CONCLUSION**

Applicant submits that in view of the foregoing remarks and/or amendments, the application is in condition for allowance, and favorable action is respectfully requested.

The Commissioner is hereby authorized to charge any fees, including extension fees, or to charge any additional fees or underpayments, or to credit any overpayments, to the Credit Card account referenced and authorized via the EFS Web (Electronic Filing System). As an alternative, in case the Credit Card cannot be processed, the Commissioner is hereby authorized to charge any fees, additional fees, or underpayments, or to credit any overpayments, to Deposit Account No. 50-1001.

Respectfully submitted,

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